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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,248	03/09/2001	Donald Henry Willis	PU010033	7064

7590 12/05/2003

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EXAMINER	
ANYASO, UCHENDU O	

ART UNIT	PAPER NUMBER
2675	11

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/803,248	WILLIS ET AL.	
	Examiner	Art Unit	
	Uchendu O Anyaso	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. **Claims 1-29** are pending in this action.

Claim Rejections - 35 USC ' 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Gadeyne et al* (U.S. Patent 6,359,663) in view of *Ho et al* (U.S. 6,208,327), Iwaki (JP Patent No. 08-088770), and further in view of *Timm* (U.S. Patent 6,246,389), and further in view of *Sani et al* (U.S. 6,219,101).

Regarding independent **claims 1, 11** and **21**, and for **claims 5-10, 16-20** and **25-29,** Gadeyne teaches a method of reducing artifacts in an image display by teaching the conversion or generation of a video signal so that motion artifacts which are caused by the difference in luminance response times for rise and decay are canceled out (*see* Abstract; column 2, lines 45-51). This is accomplished by displaying images of TV pictures and/or data information on a video display system equipped with a liquid crystal display device (column 1, lines 8-13).

Furthermore, Gadeyne teaches how a video signal for a picture is converted into different levels of luminance with different rise and fall times (column 2, lines 45-67).

However, Gadeyne does not teach reducing sparkle artifacts. However, Ho teaches this concept by teaching a method and an apparatus for eliminating image artifacts due to imaging

of post spacers, and is applicable for correction of sub-pixel defects and column disclinations that are present in any display technology that has matrix addressed pixels (column 2, lines 26-34). (In applicant's Remarks, Applicant explains that sparkle artifacts are caused by disclination, and the image artifact caused by disclination and perceived by the viewer is denoted sparkle. As such the disclinations shown in Ho represent similar artifacts explained by applicant).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne and Ho because while Gadeyne teaches a method of reducing artifacts which are caused by the difference in luminance response times, Ho teaches a method and an apparatus for eliminating image sparkle artifacts by correcting sub-pixel defects and column disclinations that are present in any display technology that has matrix addressed pixels (column 2, lines 26-34). The motivation for combining these inventions would have been to improve the image quality (column 2, lines 35-38).

However, Gadeyne and Ho do not teach the step of dividing a video signal for a picture into a higher brightness level signal and lower brightness level signal. On the other hand, Iwaki teaches dividing a video signal for a picture into a higher luminance (brightness) level signal and lower luminance (brightness) level signal (Drawing 1, items1-12, in Detailed Description See page 1-3, paragraphs 008-0015).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne, Ho and Iwaki because while the combination of Gadeyne and Ho teach a method of reducing artifacts, Iwaki teaches a method of dividing a signal according to the brightness level. The motivation for doing so would have been to obtain image data whose resolution is enhanced

with fidelity to a substantial image without causing a pattern such as a stripe pattern (*see* Abstract).

However, Gadeyne, Ho and Iwaki do not teach a method for slew rate limiting different brightness levels. On the other hand, Timm teaches a methodology wherein after the numerical value of a samples displayed by a specific pixel is decided and the numerical value of another sample is then decided (such as the higher and lower brightness taught by Iwaki), then the predictor of the slew rate between the two samples is calculated and the brightness that corresponds to the slew rate is calculated (404) wherein the determined brightness is used for the pixel (406) (see Abstract).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne, Ho, Iwaki and Timm because while the combination of Gadeyne, Ho and Iwaki teach a method of reducing artifacts that utilizes a method of dividing a signal according to the brightness level, Timm teaches how to parse the divided video signals based on the slew rates. The motivation for doing so would have been to achieve a system that provides intensity variation for slew rate with high speed and low cost (column 1, lines 55-57).

However, Gadeyne, Ho, Iwaki and Timm do not teach a low pass filter that filters the lower brightness level signal component of a video signal. On the other hand, Sani teaches this concept by teaching how to filter various luminance components of a video signal (column 1, lines 50-58; column 4, line 61 through column 5, line 48, figure 3).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Gadeyne, Ho, Iwaki and Timm and Sani's inventions because while the combination of Gadeyne, Ho, Iwaki and Timm teach a method of reducing artifacts that utilizes a method of

dividing a signal according to the brightness level and then how to parse the divided video signals based on the slew rates, Sani teaches how to filter various luminance components of a video signal (column 1, lines 50-58; column 4, line 61 through column 5, line 48, figure 3). The motivation for combining both inventions would have been to prevent flickering in a display device (column 1, lines 50-58).

Regarding **claims 2** and **14**, in further discussion of claims 1 and 11, Gadeyne teaches how his invention uses gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40).

Regarding **claims 3** and **4**, in further discussion of claim 1, Gadeyne teaches a method of video signal conversion comprising: receiving a first video signal corresponding to a picture element of a display device; receiving a predicted present luminance value from a memory, the predicted present luminance value relating to a predicted present luminance of the picture element; converting the first video signal into a second video signal corresponding to the picture element, the second video signal being based on the first video signal and the predicted present luminance value; determining a predicted future luminance value relating to a predicted future luminance of the picture element, the predicted future luminance value being based on the first video signal and the predicted present luminance value; and storing the predicted future luminance value to the memory wherein the predicted future luminance value relates to an expected response of the picture element to the second video signal (column 13, lines 60 through column 14, line 11).

Also, Gadeyne teaches an algebraic circuit by teaching an adder (37) and a substractor (36) for substracting from the first video signal (33) a predicted present luminance (column 12, lines 19-36, figure 13 at 36, 37).

Regarding **claims 12** and **13**, in further discussion of claim 11, Gadeyne teaches storing the predicted future luminance value to the memory wherein the predicted future luminance value relates to an expected response of the picture element to the second video signal (column 13, lines 60 through column 14, line 11).

Furthermore, Gadeyne teaches how to compare different brightness levels luminance video signal to the predicted value by teaching a method of video signal conversion comprising: receiving a first video signal corresponding to a picture element of a display device; receiving a predicted present luminance value from a memory, the predicted present luminance value relating to a predicted present luminance of the picture element; converting the first video signal into a second video signal corresponding to the picture element, the second video signal being based on the first video signal and the predicted present luminance value; determining a predicted future luminance value relating to a predicted future luminance of the picture element, the predicted future luminance value being based on the first video signal and the predicted present luminance value; and storing the predicted future luminance value to the memory wherein the predicted future luminance value relates to an expected response of the picture element to the second video signal (column 13, lines 60 through column 14, line 11).

Also, Gadeyne teaches an algebraic circuit by teaching an adder (37) and a subtractor (36) for subtracting from the first video signal (33) a predicted present luminance (column 12, lines 19-36, figure 13 at 36, 37).

Furthermore, Gadeyne teaches a clipping circuit by teaching circuitry that removes luminance jumps and visible artifacts in a displayed image during and immediately after the movement of the image wherein conversion occurs so that the second video signal causes a change of the first video signal from a first amplitude value to a second amplitude value to be substantially equal in shape and amplitude but reversed (i.e., inverted) in slope compared to the luminance time response of the same or another picture element of the image (column 2, lines 45-67).

Also, Gadeyne teaches a first gate by teaching a subtractor (36) and second gates (37, 39) wherein a value Δ determines how the luminance will have to change during the next correction period such that luminance would rise when Δ is positive, fall when Δ is negative, and remain equal when Δ is zero (column 9, lines 1-30, figure 13 at 36-39).

Regarding **claim 15**, in further discussion of claim 11, Timm teaches a methodology wherein after the numerical value of a samples displayed by a specific pixel is decided and the numerical value of another sample is then decided (such as the higher and lower brightness taught by Iwaki), then the predictor of the slew rate between the two samples is calculated and the brightness that corresponds to the slew rate is calculated (404) wherein the determined brightness is used for the pixel (406) (see Abstract).

Regarding **claims 22-24**, in further discussion of claim 21, Gadeyne teaches how to achieve a selectable threshold value by teaching a method of video signal conversion comprising: receiving a first video signal corresponding to a picture element of a display device; receiving a predicted present luminance value from a memory, the predicted present luminance value relating to a predicted present luminance of the picture element; converting the first video signal into a second video signal corresponding to the picture element, the second video signal being based on the first video signal and the predicted present luminance value; determining a predicted future luminance value relating to a predicted future luminance of the picture element, the predicted future luminance value being based on the first video signal and the predicted present luminance value; and storing the predicted future luminance value to the memory wherein the predicted future luminance value relates to an expected response of the picture element to the second video signal (column 13, lines 60 through column 14, line 11).

Furthermore, Gadeyne teaches how his invention uses gamma-correctors (35, 40) (*see* column 7, lines 22-45, figure 13 at 35, 40).

Also, Timm teaches a methodology wherein after the numerical value of a samples displayed by a specific pixel is decided and the numerical value of another sample is then decided (such as the higher and lower brightness taught by Iwaki), then the predictor of the slew rate between the two samples is calculated and the brightness that corresponds to the slew rate is calculated (404) wherein the determined brightness is used for the pixel (406) (see Abstract).

Response to Arguments

4. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

In response to all of applicant's arguments, please see rejection above.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

EP Patent 0457497 to *Mihara* for a waveform displaying device.

U.S. Patent 6,483,447 to *Eglit* for a digital display unit which adjusts the sampling phase dynamically for accurate recovery of pixel data encoded in an analog display signal.

U.S. Patent 5,417,221 to *Sickler* for a method and apparatus for distinguishing electrical signal waveforms.

Printed Publication (IEEE Transactions on Image Processing, Vol. 4, No. 11, November 1995) to Anil C. Kokaram et al, for Interpolation of Missing Data in Image Sequences.

Printed Publication (IEEE Transactions on Image Processing, Vol. 4, No. 11, November 1995) to Anil C. Kokaram et al, for Detection of Missing Data in Image Sequences.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uchendu O. Anyaso whose telephone number is (703) 306-5934. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras, can be reached at (703) 305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Uchendu O. Anyaso

11/17/2003

STEVEN SARAS
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